

PCT/PTO 05 OCT 2004

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

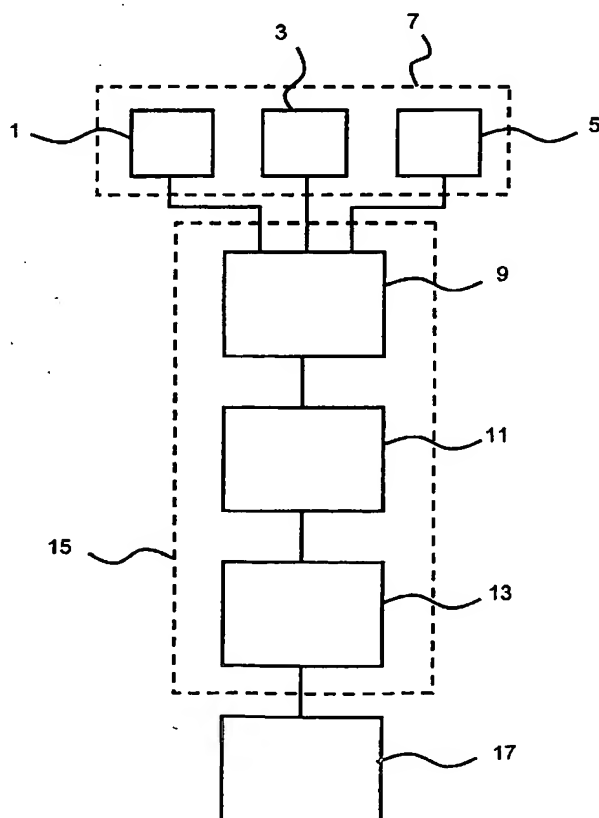
(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
16 October 2003 (16.10.2003)

PCT

(10) International Publication Number
WO 03/085566 A2

- (51) International Patent Classification⁷: **G06F 17/60**
- (21) International Application Number: **PCT/EP03/03551**
- (22) International Filing Date: **4 April 2003 (04.04.2003)**
- (25) Filing Language: **English**
- (26) Publication Language: **English**
- (30) Priority Data:
60/370,608 **5 April 2002 (05.04.2002)** **US**
- (71) Applicant (for all designated States except US): **OPTIMIZATION METHODS DEUTSCHLAND GMBH**
[DE/DE]; Am Klapperkump 5A, 35104 Lichtenfels (DE).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **HOFFESOMMER, Klaus** [DE/DE]; Am Klapperkump 5A, 35104 Lichtenfels (DE).
- (74) Agent: **SCHIUMA, Daniele**; Müller-Boré & Partner, Grafinger Str. 2, 81671 Munich (DE).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: **METHOD AND DEVICE FOR OPTIMIZING THE ORDER OF ASSIGNMENT OF A NUMBER OF SUPPLIES TO A NUMBER OF DEMANDERS**

(57) Abstract: An inventive device for determining an optimized assignment of a number of supplies or resources, such as computer processor units, each having a certain supply amount or resource amount, such as a processing capacity, to a number of demanders or demands, such as tasks to be processed by the computer processor units, each having a certain demand amount to be satisfied by said supplies or resources, such as a capacity demand, i.e. a processing capacity necessary to process the task, in which, after the assignment, the sum of unsatisfied demand amounts is minimized.

O 03/085566 A2

WO 03/085566 A2



Published:

— without international search report and to be republished
upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

Rec'd PCT/PTO 05 OCT 2004

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference H 2268-ds/sei	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/EP 03/ 03551	International filing date (day/month/year) 04/04/2003	(Earliest) Priority Date (day/month/year) 05/04/2002
Applicant OPTIMIZATION METHODS DEUTSCHLAND GMBH		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 05 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

17

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/EP 03/03551

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

An inventive device for determining an optimized assignment of a number of supplies or resources, such as computer processor units, each having a certain supply amount or resource amount, such as a processing capacity, to a number of demanders or demands, such as tasks to be processed by the computer processor units, each having a certain demand amount to be satisfied by said supplies or resources, such as a capacity demand, i.e. a processing capacity necessary to process the task, in which, after the assignment, the sum of unsatisfied demand amounts is minimized.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/03551

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G06F17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	ANDREW V. GOLDBERG, BORIS V. CHERKASSKY: "ON IMPLEMENTING PUSH-RELEABLE METHOD FOR THE MAXIMUM FLOW PROBLEM" TECHNICAL REPORT STAN-CS-94-1523, 'Online! 1994, XP002254653 Stanford University, USA Retrieved from the Internet: <URL:http://citeseer.nj.nec.com/cache/pape rs/cs/685/ftp:zSzzSztheory.stanford.edu/zSz pubzSzgoldbergzSzstan-cs-tr-94-1523.pdf/ch erkassky94implementing.pdf> 'retrieved on 2003-09-16! cited in the application the whole document --- -/--	1-80

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

25 September 2003

Date of mailing of the international search report

10/10/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Sündermann, R

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/03551

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>ANDREW V. GOLDBERG, ROBERT E. TARJAN: "A New Approach to the Maximum Flow Problem" PROCEEDINGS OF THE EIGHTEENTH ANNUAL ACM SYMPOSIUM ON THEORY OF COMPUTING, 'Online! November 1986 (1986-11), pages 136-146, XP002254654 Berkeley, California, United States ISBN: 0-89791-193-8 Retrieved from the Internet: <URL:http://delivery.acm.org/10.1145/20000/12144/p136-goldberg.pdf?key1=12144&key2=7814173601&coll=portal&dl=ACM&CFID=2181828&CFTOKEN=68827537> 'retrieved on 2003-09-16! cited in the application the whole document</p>	1-80
X	<p>HAROLD N. GABOW, ROBERT E. TARJAN: "Almost-optimum speed-ups of algorithms for bipartite matching and related problems" PROCEEDINGS OF THE TWENTIETH ANNUAL ACM SYMPOSIUM ON THEORY OF COMPUTING, 'Online! 1988, pages 514-527, XP002254655 Chicago, Illinois, United States ISBN: 0-89791-264-0 Retrieved from the Internet: <URL:http://citeseer.nj.nec.com/cache/papers/cs/3311/http:zSzzSzwww.uni-paderborn.de/zSz{arturSzTEACHINGzSzLITERATURzSzNETWORK-ALGORITHMSzSznci-tr-98-045.pdf/goldberg98recent.pdf> 'retrieved on 2003-09-16! the whole document</p>	1-80
X	<p>ANDREW V. GOLDBERG: "Recent Developments in Maximum Flow Algorithms" TECHNICAL REPORT NO. 98-045, 'Online! April 1998 (1998-04), XP002254656 NEC Research Institute, USA Retrieved from the Internet: <URL:http://citeseer.nj.nec.com/cache/papers/cs/3311/http:zSzzSzwww.uni-paderborn.de/zSz{arturSzTEACHINGzSzLITERATURzSzNETWORK-ALGORITHMSzSznci-tr-98-045.pdf/goldberg98recent.pdf> 'retrieved on 2003-09-16! the whole document</p>	1-80
X	<p>US 6 044 361 A (KALAGNANAM JAYANT R ET AL) 28 March 2000 (2000-03-28) abstract column 9, line 55 -column 12, line 11; claims 1-6</p>	1-80

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 03/03551

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6044361	A	28-03-2000	NONE